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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,248	11/28/2003	Richard Phillips		1635

7590 11/23/2005

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EXAMINER

JENKINS, DANIEL J

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 11/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/724,248

Applicant(s)

PHILLIPS ET AL.

Examiner

Daniel J. Jenkins

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 11-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The Examiner has carefully considered Applicant's Response of 10/27/05. The Examiner finds that Applicant is correct in pointing out that the limitation to high velocity compaction of pending claims 6 and 7 were not addressed in the Final Action of 9/9/05. At this time, the Examiner makes a new rejection to address this limitation, and adds discussion to the limitation of B and/or Ni being present in the primary reference.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill in view of Ozaki et al. and further in view of Allroth et al.

Hill discloses the invention substantially as claimed. Hill discloses a process comprising:

mixing a ferrous metal powder (col. 2, line 54) with a lubricant (col. 3, lines 52-62) to form a mixture;

compacting the mixture at a pressure of 10-40 tons/sq.in.; and

heating the compacted mixture at a temperature of 1850-2400oF to liquid phase sinter the compact to form a sintered metal body (col. 3, line 63-col. 4, line 10).

Hill further discloses wherein the mixture further includes other metal powders including Ni which meets the limitation of claim 4.

However, Hill does not disclose lauric acid as a member of the lubricant, but discloses that conventional lubricants can be used in the invention (col. 3, lines 56-57).

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Ozaki et al. teaches that the lubricant can include lauric acid (col. 5, lines 3-4) in the same field of invention for the purpose improving the flowability of the mixture.

It would have been obvious to one having ordinary skill in the art to use the lubricant of Ozaki et al. which includes lauric acid in the invention of Hill in order to improve the flowability of the mixture.

Hill discloses processing parameters of pressure (10 to 40 tons/sq. in.) and temperature (1850°F-2400°F) that significantly overlap those as claimed by Applicant, establishing a prima facie case of obviousness (see MPEP 2144.05).

Hill states that his invention produces products of greater than 90% density (col. 4, lines 9-10), but is silent as to greater than 99% density. Hill further provides motivation to operate at parameters that result in the highest density, stating that hardness and low porosity are desirable characteristics of the invention.

Allroth et al. teaches that high velocity compaction is used to produce compacts of high density above 99% which results in final products of density approaching theoretical.

It would have been obvious to use the high velocity compaction method of Allroth et al. in the invention of Hill in view of Luk et al. in order to obtain a final sintered product approaching 100% theoretical density.

4. Claims 1-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill in view of Luk et al. and further in view of Allroth et al.

Hill discloses the invention substantially as claimed. Hill discloses a process comprising:

mixing a ferrous metal powder (col. 2, line 54) with a lubricant (col. 3, lines 52-62) to form a mixture;

compacting the mixture at a pressure of 10-40 tons/sq.in.; and

heating the compacted mixture at a temperature of 1850-2400°F to liquid phase sinter (col. 3, line 11) the compact to form a sintered metal body (col. 3, line 63-col. 4, line 10).

Hill further discloses wherein the mixture further includes other metal powders including Ni which meets the limitation of claim 4.

However, Hill does not disclose lauric acid as a member of the lubricant, but discloses that conventional lubricants can be used in the invention (col. 3, lines 56-57).

Luk et al. teaches that the mixture can include lauric acid (col. 3, line 40) and graphite (col. 3, line 11) in the same field of invention for the purpose improving the flowability of the mixture.

The Examiner notes that the inclusion of graphite further meets the limitation of claim 4.

The Examiner notes that the designation of the lauric acid as a binder component in the lubricant of Luk et al. is understood to mean that lauric acid provides a lubricant function, especially in light of graphite as another lubricant constituent (which further meets the liquid phase former limitation).

It would have been obvious to one having ordinary skill in the art to use the lubricant of Luk et al. which includes lauric acid and graphite in the invention of Hill in order to improve the flowability of the mixture.

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Hill discloses processing parameters of pressure (10 to 40 tons/sq. in.) and temperature (1850oF-2400°F) that significantly overlap those as claimed by Applicant, establishing a prima facie case of obviousness (see MPEP 2144.05).

Hill states that his invention produces products of greater than 90% density (col. 4, lines 9-10), but is silent as to greater than 99% density. Hill further provides motivation to operate at parameters that result in the highest density, stating that hardness and low porosity are desirable characteristics of the invention.

Allroth et al. teaches that high velocity compaction is used to produce compacts of high density above 99% which results in final products of density approaching theoretical.

It would have been obvious to use the high velocity compaction method of Allroth et al. in the invention of Hill in view of Luk et al. in order to obtain a final sintered product approaching 100% theoretical density.

5. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill in view of Ozaki et al.

Hill in view of Ozaki et al. disclose the invention substantially as claimed (see paragraph 3 above). However, Hill in view of Ozaki et al. does not disclose compacting at pressure of greater than 45 tons/sq. in., but only discloses compacting up to 40 tons/sq. in. Hill further provides motivation to operate at parameters that result in the highest density, stating that hardness and low porosity are desirable characteristics of the invention.

It is common knowledge in the art to increase compaction pressure based on desired final product density, the Examiner finding motivation to increase pressure to greater than 45 tons/sq. in. in order to obtain final sintered product density approaching theoretical.


6. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill in view of Luk et al.

Hill in view of Luk et al. disclose the invention substantially as claimed (see paragraph 4 above). However, Hill in view of Luk et al. does not disclose compacting at pressure of greater than 45 tons/sq. in., but only discloses compacting up to 40 tons/sq. in. Hill further provides motivation to operate at parameters that result in the highest density, stating that hardness and low porosity are desirable characteristics of the invention. It is common knowledge in the art to increase compaction pressure based on desired final product density, the Examiner finding motivation to increase pressure to greater than 45 tons/sq. in. in order to obtain final sintered product density approaching theoretical.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Jenkins whose telephone number is 571-272-1242. The examiner can normally be reached on M-TH6:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1242. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel J. Jenkins
Primary Examiner
Art Unit 1742

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